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It was anticipated that the single-word free association responses to sentences varying in degree of semantic integration (as indexed by sentence norms) would differ quantitatively. One group of 60 undergraduates was given a list of 16 sentences characterized by high semantic integration (HSI), while another group of 60 undergraduates received a list of 16 sentences characterized by low semantic integration (LSI). The subjects' task was to respond to the meaning of each sentence with the first word that they thought of. The results indicated that the primary responses to HSI sentences were stronger than the primary responses to LSI sentences, and that there was less variability of responding to HSI sentences than to LSI sentences. (See related document ED 016 203.) (Author/DO)

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QUANTITATIVE ASPECTS OF SINGLE-WORD FREE ASSOCIATIONS TO SENTENCES VARYING IN SEMANTIC INTEGRATION[1]

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It was anticipated that the single-word free association responses to sentences varying in degree of semantic integration (as indexed by sentence norms) would differ quantitatively. One group of 60 Ss was given a list of 16 sentences characterized by high semantic integration (HSI), while another group of 60 Ss received a list of 16 sentences characterized by low semantic integration (LSI). The Ss' task was to respond to the meaning of each sentence with the first word that they thought of. The results indicated that the primary responses to HSI sentences were stronger than the primary responses to LSI sentences, and that there was less variability of responding to HSI sentences than to LSI sentences.

A semantically well-integrated sentence can be characterized as one in which the predicate phrase contains strong contextual features--as revealed by associative sentence norms (Rosenberg & Koen, 1968)--of the subject-noun. Thus, the sentence The doctor cured the patient is considered to be semantically well integrated while the sentence The doctor fired the coward is not, because cured the patient occurs frequently as a response under instructions to associate a verb and an object-noun to the subject-noun doctor in the sentence frame : The doctor _____ the _____.

Recent research (Rosenberg, in press) has shown that sentences displaying high semantic integration (HSI) are recalled better than sentences displaying low semantic integration (LSI), and that HSI sentences are stored in larger chunks than LSI sentences. For HSI sentences of the type given in the example above, the results suggested that the entire sentence constituted the memory unit. If this is the case, it is reasonable to hypothesize that the words within an HSI sentence are more likely than the words within an LSI sentence to be recoded for storage into a single semantic representation of the meaning of the entire string.

The present study was designed to gain information on the availability of single semantic representations for HSI sentences. Since free and controlled word-association techniques have proved helpful in identifying the

semantic and contextual features of nouns (Deese, 1965; Rosenberg & Koen, 1968), it was decided to pursue the question with a word association task. Specifically, it was anticipated that the single-word free association response primaries that Ss produce to the meanings of HSI sentences would be stronger than those that they produce to the meanings of LSI sentences. In addition, it was anticipated that the distributions of single-word free associations for HSI-sentences would show less variability than those of LSI sentences.

Method

Subjects

The Ss were 120 paid undergraduate volunteers who were assigned alternately to two groups of 60 Ss each.

Materials

Two lists of 16 sentences were prepared, an HSI list and LSI list, with the help of the Rosenberg-Koen (1968) "Norms for sequential associative dependencies in active declarative sentences." Each HSI sentence and its LSI counterpart were matched as closely as possible for length (number of letters) and for the Thorndike and Lorge (1944) frequency of their content words. Each HSI sentence and its LSI counterpart contained the same subject-noun, and they were also matched on the class of their object-nouns (i.e., animate, inanimate). Examples of the HSI sentences are The thief stole the money, The dog chased the cat, and The editor wrote the article. The LSI counterparts of these sentences are The thief passed the wagon, The dog scared the goat, and The editor owned the castle. The predicate phrases of the HSI sentences were selected from the top of the associative hierarchies for the subject-nouns, while the LSI predicates were selected from the bottom of the associative hierarchies.

Each list was printed on a single page of a booklet. Two different sentence orders were used. The sentences were numbered from 1 through 16 and an underlined blank space followed. The first page of each booklet carried the test instructions.

Procedure

The data were collected by group-testing in a classroom. After the Ss were seated, each was given either an HSI or an LSI booklet (they were alternated). The E then read aloud the instructions (which were the same for

both conditions) while the Ss followed in their booklets. The specific procedure that was followed in the task is described in the instructions that are reproduced here.

Sentence Meaning Association Task

Instructions

On the page that follows you will find a number of sentences. After each sentence there is a blank underlined space. Your task is to read each sentence and respond with the first word that the meaning of the sentence makes you think of. Respond with one word only, and do not change a response once you've written it down. There are no right or wrong answers in this task. Just put down the first word that the meaning of a sentence makes you think of. Try to work rapidly, and do not leave any blanks. Please write or print neatly. As soon as you've finished, check to make sure that you've left no blanks and turn your paper over.

Results and Discussion

A frequency distribution was made of the responses for each of the 16 HSI and LSI sentences. Two scores were then determined for each sentence: frequency of the response primary, and number of different associations. The mean frequency for the primary responses to the HSI sentences was 10.44. This value was 6.50 for the LSI sentences. The means for the number of different associations were 34.62 for the HSI sentences and 41.44 for the LSI ones. Thus, it appears that the response primaries for the HSI sentences were stronger than they were for the LSI sentences, and that variability of responding was greater for LSI sentences than it was for HSI sentences. The Wilcoxon matched-pairs signed-ranks test was used to evaluate these differences. The results were found to be highly significant for both primary-response strength ($p < .005$, one-tailed) and number of different associations ($p < .01$, one-tailed).

It is clear from these results that there are quantitative differences in the associations made to HSI and LSI sentences, and that the nature of these differences is predictable. The associations available for HSI sentences appear to be stronger than those available for LSI sentences. However, the results of the present study do not settle the question whether the associations to HSI sentences actually contribute to the efficiency with which such sentences are stored and retrieved. We are at present trying to find out whether the overt presence of a sentence associate during a study trial facilitates storage and retrieval of that sentence.

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Footnote

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